

Clarion**APA4400G** 100W × 4 channel power amplifier**APA4200G** 50W × 4 channel power amplifierOPERATION AND
INSTALLATION MANUAL

1. INTRODUCTION

Built-in Strong Power Supply

A stable power is supplied even at the instant change of signals through lowering impedance achieved thoroughly by the adoption of PWM DC-DC converter supported by high performance and low loss power MOS-FET, a group of parts with large capacities, low impedance capacitors and toroidal coils and by the further adoption of thick foil substrate (*bus bar), etc. (*APA4400G)

Design emphasizing sound quality

Adopting a low-noise, high slew rate operational amplifier, power amplification element with good current linearity, and through-relays that pass complicated signal lines, this unit has been designed with much consideration of sound quality.

Diversified Functions

The preoutput terminal for external amplifier expansion, high-pass/low-pass filter that varies the cut-off frequency from 50 Hz to 200 Hz, and etc., allows full-scale system grade-up of a multi-amplifier, multi-speaker.

Power Guard Circuit

When the amp is in overdrive, this circuit detects any distortion and automatically holds down the input gain to prevent unpleasant clipping distortion. The power guard circuit can be switched on/off with the selector switch.

High definition: power guard on

High current: power guard off

*: The power guard circuit is patented by the McIntosh Laboratories of the U.S.A.

Built-in Protection Circuit

This circuit protects against damage to the amplifier from overcurrent and overheat caused by an excessive power voltage and short-circuit when overloading.

A channel mode selector switch provides the following high output (rated):

APA4400G

- 4-channel mode ... 100W × 4
- 3-channel mode ... 70W × 2 + 260W × 1
- 2-channel mode ... 200W × 2

APA4200G

- 4-channel mode ... 50W × 4
- 3-channel mode ... 35W × 2 + 110W × 1
- 2-channel mode ... 100W × 2

Protection Circuit

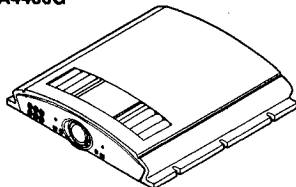
A protection circuit is used to constantly protect against damage to the amplifier from loads, short-circuits, overcurrents, overheating, etc.

Low-heat Design

Reduced power supply circuit heat loss and a large fan (APA4400G) with a high cooling efficiency structure reduce the heat generated during operation.

2. DESCRIPTION

APA4400G



APA4200G

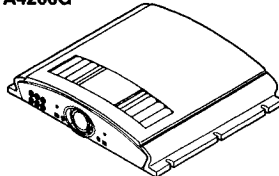


Figure 1 Clarion APA4400G/APA4200G 4-Channel Car Audio Amplifier

The Clarion APA4400G/APA4200G car audio amplifier (shown in Figure 1) is a 4 channel amplifier that delivers 100 watt × 4 or 50 watt × 4 (RMS), respectively, into a 4 ohm load. Depending on your application, one or more amplifiers is an excellent choice for customizing your own car audio system.

All connections and controls are on end panels and are straightforward and easy to understand.

We use gold-plated RCA and barrier connectors to ensure the best electrical connection for your system. Included are external automotive-type fuses that are easy to replace.

3. Amplifier Controls and Power Indicator Connections

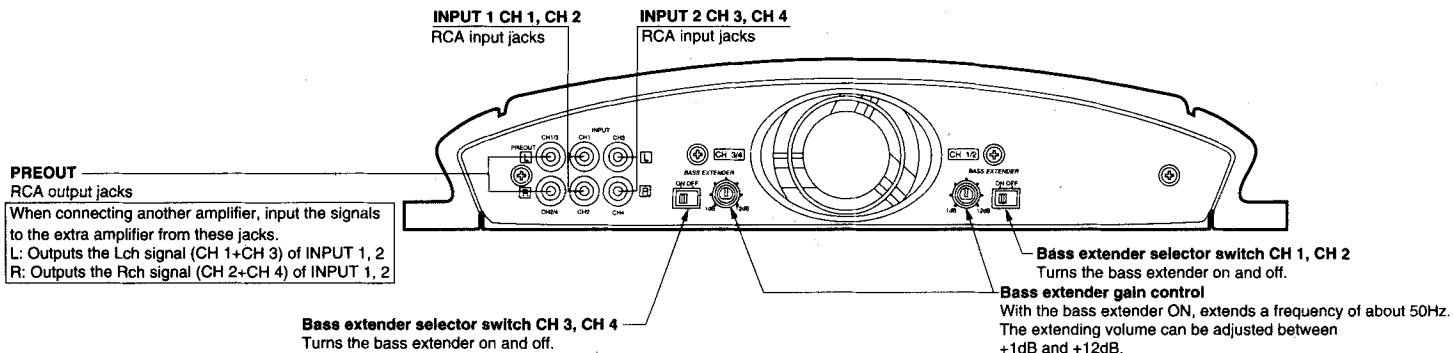


Figure 2 Front Panel Layout of the Clarion APA4400G/APA4200G 4-Channel Car Audio Amplifier

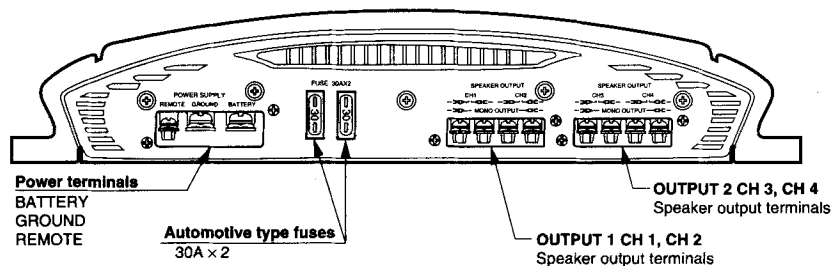


Figure 3 Rear Panel Layout of the Clarion APA4400G 4-Channel Car Audio Amplifier

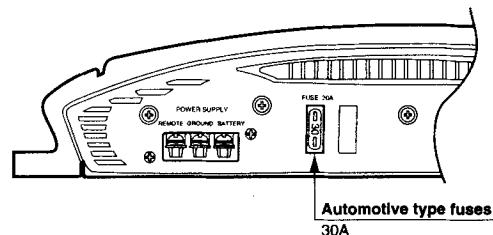


Figure 4 Rear Panel Layout of the Clarion APA4200G 4-Channel Car Audio Amplifier

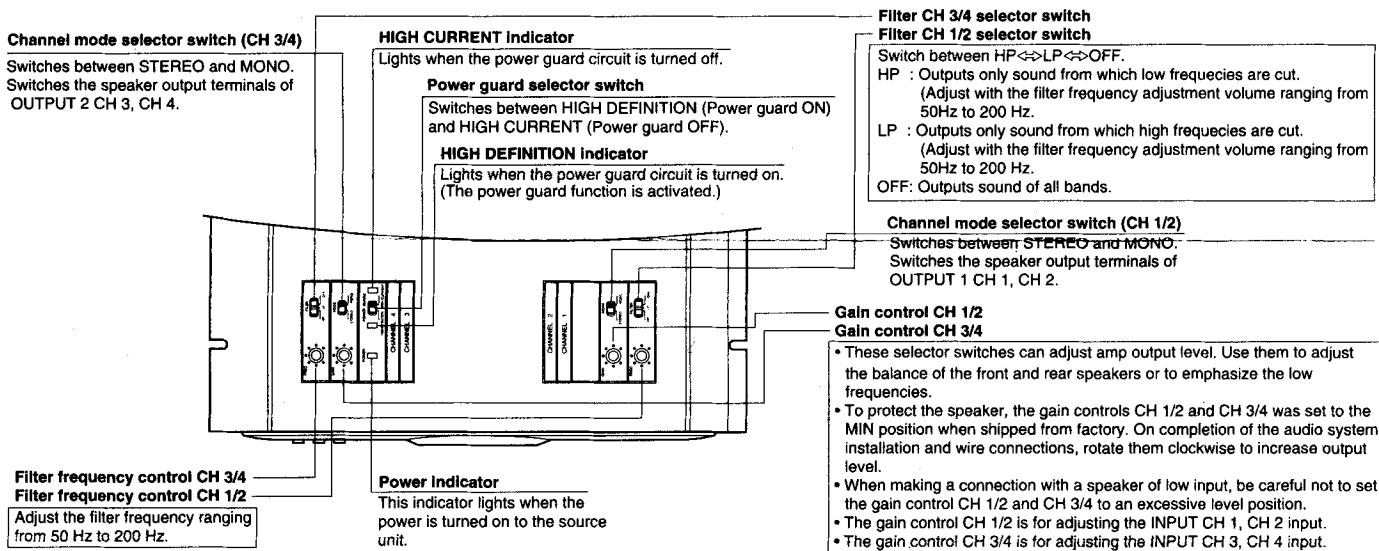


Figure 5 Upper Panel Layout of the Clarion APA4400G/APA4200G 4-Channel Car Audio Amplifier

4. CONNECTIONS

1. The rear panel of the APA4400G/APA4200G holds the external fuse as well as connections for power, speakers, as shown in Figure 3.
2. On the APA4400G/APA4200G, the gold-plated power terminals are labeled (left to right) as REMOTE (remote turn-on), GROUND and BATTERY.

3. The speaker terminals are also gold-plated.
4. The INPUT and PREOUT connectors on the APA4400G/APA4200G are gold-plated RCA jacks, marked [L] for the Left channel and [R] for the Right channel.

5. APPLICATIONS

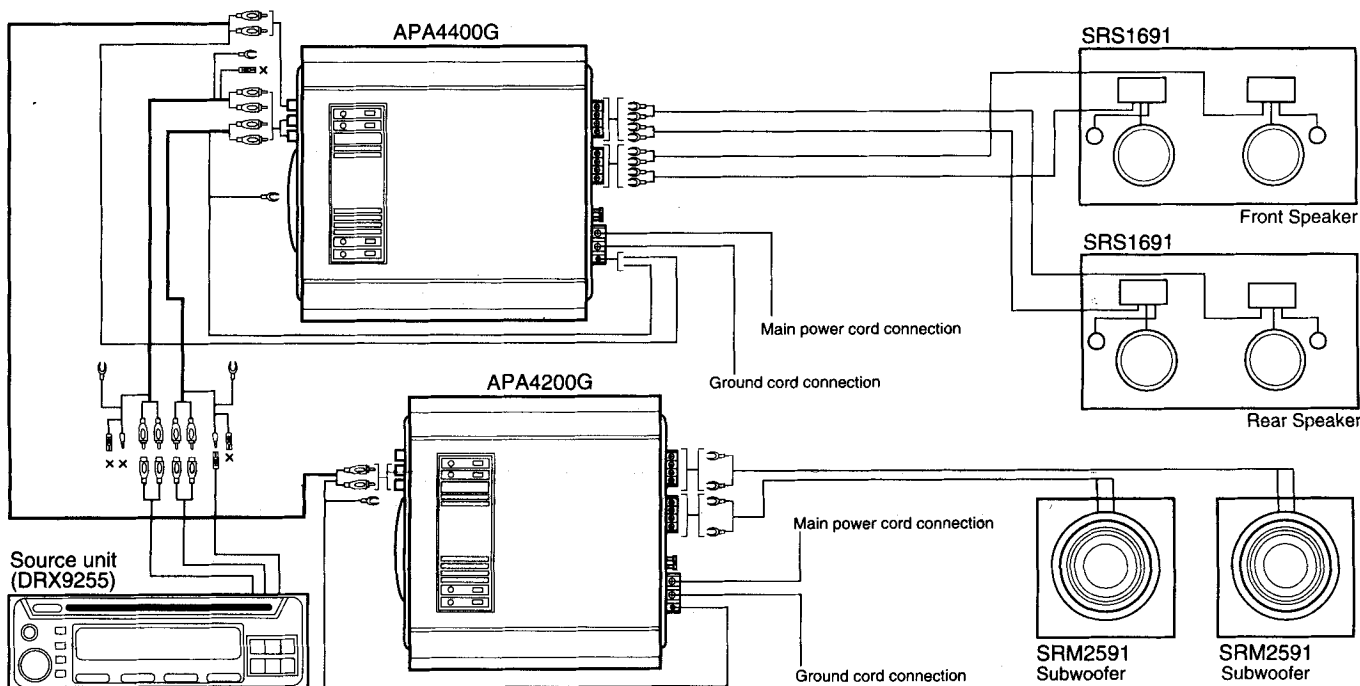


Figure 6 Overall Connections

The Clarion APA4400G/APA4200G 4-channel car audio amplifier can be used in a variety of system applications. We have presented connection examples for an audio system that will help you design your own audio system.

Note:
Before switching the channel mode and low-pass filter selector switches, turn the power of the source unit off.

4-Channel Mode

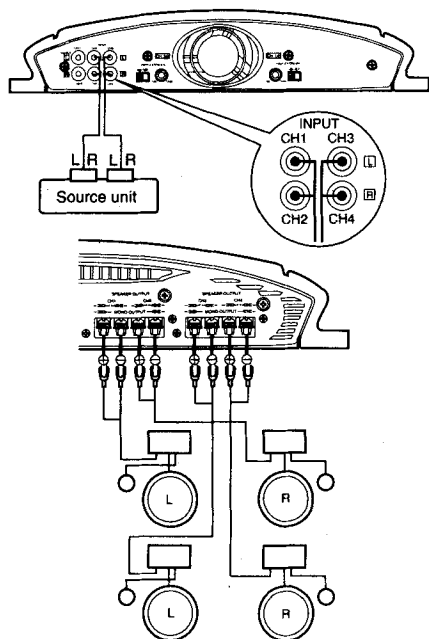


Figure 7 4-Channel Mode

3-Channel Mode

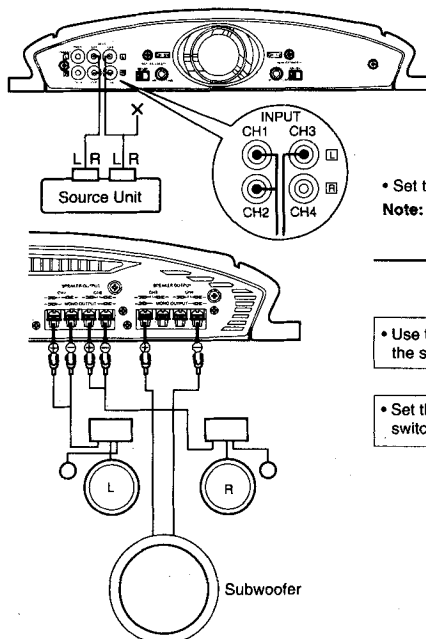
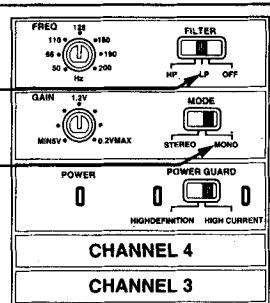


Figure 8 3-Channel Mode

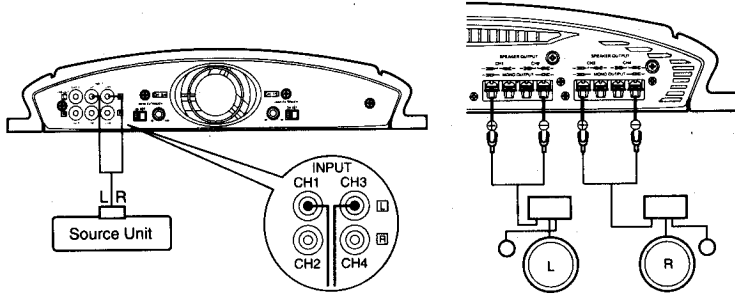
- Set the filter selector switch and the channel mode selector switch.
- Note:** When setting these selector switches, be sure to turn off the power of the source unit.

- Use the LP position to connect the subwoofer speakers.

- Set the channel mode selector switch to the MONO position.



2-Channel Mode



- Set the filter selector switch and the channel mode selector switch.

Note: When setting these selector switches, be sure to turn off the power of the source unit.

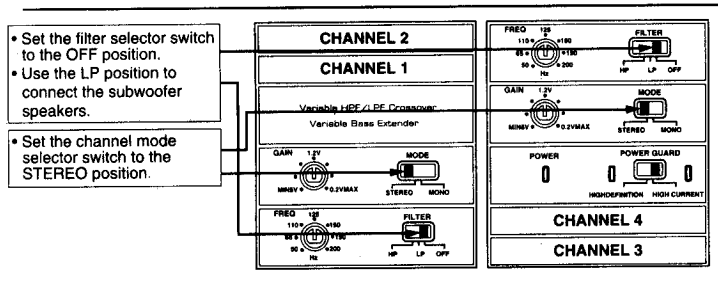


Figure 9 2-Channel Mode

Connecting the PREOUT RCA Output Jacks

This amplifier (APA4400G/APA4200G)

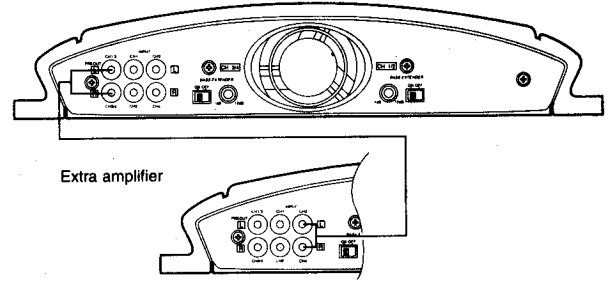


Figure 10 Connecting The PREOUT RCA Output Jacks

When connecting another amplifier, input the signals to the extra amplifier's INPUT RCA jacks from the APA4400G/APA4200G's PREOUT RCA output jacks.

The signals from the APA4400G/APA4200G's INPUT 1 jacks are output from these jacks.

6. INSTALLATION

The section lists mounting and wiring precautions for installing the Clarion APA4400G/APA4200G car audio amplifier. Combined with the experience of a professional installer, these safeguards are sufficiently detailed to successfully complete installation. If you do not have the necessary skills, do not install the amplifier yourself. Instead, see your authorized Clarion dealer for installation recommendations.

Mounting Precautions

Although this Clarion amplifier incorporates a large heat sink and multi level protection circuits, mounting any amplifier in a confined space without any air movement can still damage internal circuits over time. Choose a site that provides adequate ventilation around the amplifier. For easy system set-up, mount the amplifier so the controls and fuse will be accessible after installation.

In addition, observe these precautions:

- For the most efficient cooling, mount the amplifier so cool air runs along the length of the fins rather than across them. Remember, any moving air will dissipate heat.
- Mount the amplifier on a rigid surface. Do not install the amplifier on plastic or other combustible material.
- Prior to drilling, make sure proposed mounting holes will not cut into the fuel tank, fuel lines, brake lines (under chassis), or electrical wiring.

Cautions on installation

1. Be sure to use the screws supplied with this amplifier to install it in your car. Mounting the amplifier using screws other than those supplied may lead to malfunctioning of the unit.
2. When you mount the amplifier, be careful not to damage the wiring in your car with tools or parts such as tapping screws.

Installation procedure

1. Open six holes ($\varnothing 3.5$ mm) to mount the unit.
2. Use the six tapping screws (5×30) to secure the unit. (APA4400G)
[For fixing the APA4200G, use the four tapping screw (5×30).]
3. When mounting the unit on a plastic plate or carpet, use the plate nuts.

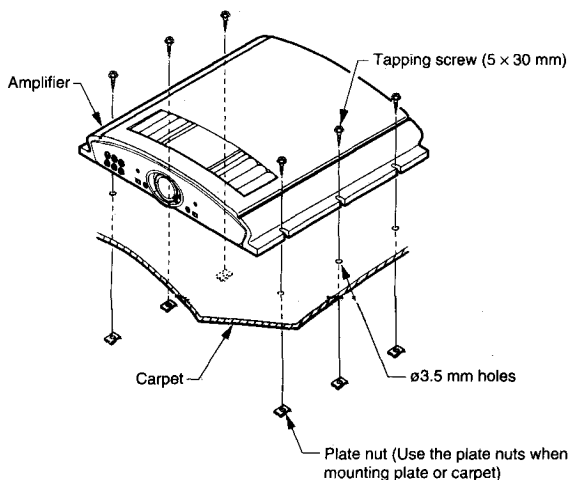


Figure 11 Installation Procedure

Wiring Precautions

- Read all wiring precautions. If you are not sure of the connections, contact your authorized Clarion dealer.
- Before installation, make sure the source unit power switch is turned OFF.
- Disconnect the negative (-) lead at the battery before making any power connections.
- When making connections, be sure that each connection is clean and secure. Insulate final connections with electrical tape or shrink tubing. Failure to do so may damage your equipment.
- A secure, clean ground connection is critical to the performance of your Clarion car audio amplifier. Use the shortest ground wire possible to minimize resistance and avoid noise problems.
- Add an external fuse on the positive (+) power lead and connect it as close as possible to the vehicle's (+) battery terminal. Use a rating that equals the total current consumption at full output of all amplifiers in the system. Adding an external fuse will protect the electrical system from short-circuits that can cause fire.
- Refer to Figure 12 when making electrical connections. Connect the amplifier's positive (+) power lead via a fuse directly to the positive (+) terminal on the car battery. Do not connect this wire to the car's fuse panel. Use the yellow-insulated 8 gauge (for APA4400G) or 10 gauge (for APA4200G) (or longer) wire for the amplifier's positive (+) power lead and the same gauge black insulated wire for the ground.
- A ring terminal cannot be used for the speaker output terminal of the APA4400G and the APA4200G, and for the power source terminal of the APA4200G. (The terminal screw has been designed not to come off.)
- When replacing an amplifier's fuse, always use one having the same current rating. Substituting with a higher-rated fuse can reduce protection and may result in serious damage to the amplifier.
- Never ground the speakers to the vehicle chassis or body.
- Make sure that your vehicle's electrical system (i.e., alternator, battery, etc.) is capable of handling the additional load. If you are planning to install a multi-amplifier system, you may need to add a second battery and possibly upgrade the alternator with a higher-output-rated model. Consult your Clarion dealer for recommendations.
- To avoid possible noise problems, run the amplifier's positive (+) power lead along one side of the vehicle to the battery. Run the remote turn-on wire and RCA audio cable down the center, and route the speaker wires along the remaining side. If wires must cross, run the perpendicular to each other.
- When creating passage holes for the power wire, use grommets to eliminate any sharp edges created during drilling. This will protect the wire from being nicked and causing a short-circuit.
- Extra cable causes signal loss and acts as an "antenna" for noise. Use only high quality RCA cables that are no longer than necessary to make a direct connection with the source unit or equalizer.
- Depending on the type of system being installed, refer to the examples in Figures 4 through 9 for information on wiring and setting the operation mode.

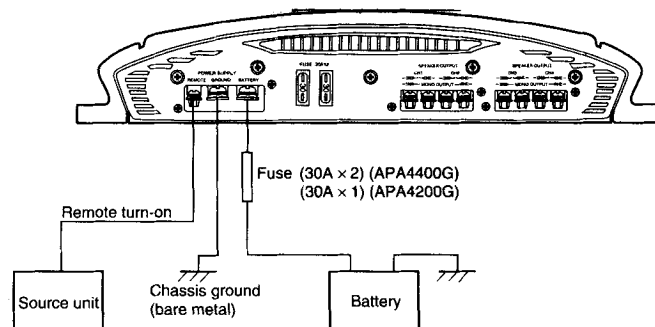


Figure 12 Electrical Connections for the APA4400G/APA4200G Car Audio Amplifier

7. FINAL SYSTEM CHECKS

1. Start the engine and turn on the source unit. After a short two-second delay, slowly raise the volume and listen to the sound. If you hear any noise, static, distortion, or no sound at all, check the connections, and also refer to the "Troubleshooting" section. Depending on your system design, the levels may become quite loud even a low volume control settings. Until you get a "feel" of the power of the system, use care when adjusting the controls.
2. Adjust the balance control from left to right and listen to the results. Audio imaging should match control settings.

3. Increase the volume and verify that the APA4400G/APA4200G amplifier reproduces audio without distortion at all frequencies. If you hear distortion, check the connections and verify that the gain controls are set correctly. Another possibility is damaged (or under-powered) speakers. Once again, refer to the "Troubleshooting" section for additional help.

8. TROUBLESHOOTING

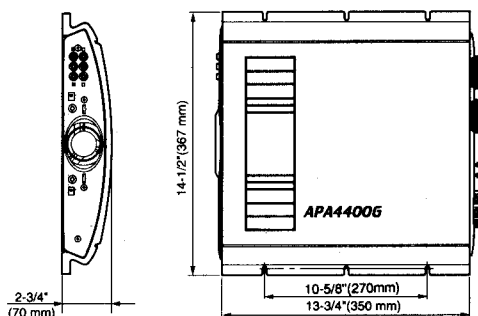
Symptom	Cause	Solution
No audio	Low or no remote turn-on voltage Blown fuse Power wires not connected Speakers not connected or blown	Check remote connections at amplifier and source unit. Replace with new fast-blow fuse (same rating). Check power and ground connections at amplifier; check battery connections. Check speaker connectors at amplifier; measure coil impedance.
Audio cycles on and off	Thermal protection circuits are shutting amplifier off.	Check location for adequate ventilation; consult an authorized Clarion dealer.
Distorted sound	Gain control is not set properly, or damaged speaker cones	Adjust gain control; check each speaker cone for signs of damage (e.g., frozen cone, burning smell, etc.).
Whining or ticking noise in the sound with engine on	Amplifier is picking up alternator noise or radiated noise	Check power and ground connections on amplifier; check or move audio cables; install an in-line noise filter on source unit's power wire; check alternator and/or voltage regulator; test for weak battery or add water to battery.

9. SPECIFICATIONS

APA4400G

Maximum Output :	175W × 4
Rated Output :	100W × 4 (4-channel mode) (20Hz ~ 20kHz, 0.02%, 4Ω, with 4-channel simultaneous output) 70W × 2 + 260W × 1 (3-channel mode) 200W × 2 (2-channel mode)
Frequency Response :	10 ~ 50,000Hz
Harmonic Distortion :	0.02% (20Hz ~ 20kHz, 4-channel mode, 100W × 4 simultaneous output)
S/N Ratio :	118dB
Applicable Speaker Impedance:	4Ω (2Ω ~ 8Ω, channel mode: Stereo)
Input Sensitivity :	200mV ~ 5,000mV
Low-Pass Filter/High-Pass	
Filter Cut-off Frequency :	50Hz ~ 200Hz, (-24dB/oct)
Bass Extender :	+1dB ~ +12dB (at 50 Hz)
Power Source Voltage :	14.4V
Ground :	Negative
Power Consumption :	56A (with 100W × 4 rated output) 1.8A (amplifier ON, no input)
Auto-fuse capacity :	30A × 2
External dimensions :	14-1/2" (367mm) Width × 2-3/4" (70mm) Height × 13-3/4" (350mm) Depth
Weight :	15.43 lb. (7 kg)

* For improvement purposes, specifications and design are subject to change without prior notice.



APA4200G

Maximum Output :	90W × 4
Rated Output :	50W × 4 (4-channel mode) (20Hz ~ 20kHz, 0.02%, 4Ω, with 4-channel simultaneous output) 35W × 2 + 110W × 1 (3-channel mode) 100W × 2 (2-channel mode)
Frequency Response :	10 ~ 50,000Hz
Harmonic Distortion :	0.02% (20Hz ~ 20kHz, 4-channel mode, 50W × 4 simultaneous output)
S/N Ratio :	115dB
Applicable Speaker Impedance:	4Ω (2Ω ~ 8Ω, channel mode: Stereo)
Input Sensitivity :	200mV ~ 5,000mV
Low-Pass Filter/High-Pass	
Filter Cut-off Frequency :	50Hz ~ 200Hz, (-24dB/oct)
Bass Extender :	+1dB ~ +12dB (at 50 Hz)
Power Source Voltage :	14.4V
Ground :	Negative
Power Consumption :	28A (with 50W × 4 rated output) 1.1A (amplifier ON, no input)
Auto-fuse capacity :	30A × 1
External dimensions :	14-1/2" (367mm) Width × 2-3/4" (70mm) Height × 12-1/4" (310mm) Depth
Weight :	11.9 lb. (5.4 kg)

* For improvement purposes, specifications and design are subject to change without prior notice.

